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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|------------------------|------------------|
| 10/657,085 | 09/09/2003 | Rene Perrot | 21376 | 9162 |
| 27182 | 7590 | 03/24/2010 | EXAMINER | |
| PRAXAIR, INC. LAW DEPARTMENT - M1 557 39 OLD RIDGEBURY ROAD DANBURY, CT 06810-5113 | | | MCDONALD, RODNEY GLENN | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 1795 | |
| | | | MAIL DATE | DELIVERY MODE |
| | | | 03/24/2010 PAPER | |

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte RENE PERROT, THOMAS J. HUNT,
HOLGER J. KOENIGSMANN, and PAUL S. GILMAN

Appeal 2009-007469
Application 10/657,085
Technology Center 1700

Decided: March 24, 2010

Before MICHAEL P. COLAIANNI, CATHERINE Q. TIMM, and
BEVERLY A. FRANKLIN, *Administrative Patent Judges*.

FRANKLIN, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellants appeal under 35 U.S.C. § 134 from the Examiner's rejection of claims 1-6, 8-12, and 14-17. We have jurisdiction under 35 U.S.C. § 6(b).

STATEMENT OF THE CASE

Claim 1 is representative of the subject matter on appeal and is set forth below:

1. A method of manufacturing a sputter target assembly comprising the steps of:
 - a) manufacturing a backing plate, the backing plate having a planar top surface and a cylindrical recess therein, the recess having a depth and a diameter, and the backing plate having a yield strength;
 - b) manufacturing a near final shape target insert, wherein the target insert has a frusta-conical rear surface that corresponds to the cylindrical recess of the backing plate and a frusta-conically configured front surface, wherein at least about fifty percent of the front surface is frusta-conically configured, the target insert further having a yield strength greater than that of the backing plate, and a height greater than the depth of the cylindrical recess in the backing plate; and
 - c) hot pressing the target insert into the cylindrical recess of the backing plate to a state of plastic deformation so as to diffusion bond the target insert to the backing plate and form the target assembly, where the target insert protrudes above the planar front surface of the backing plate.

The prior art relied upon by the Examiner in rejecting the claims on appeal is:

| | | |
|-------------------|-----------------|---------------|
| Hunt | US 6,599,405 B2 | Jul. 29, 2003 |
| Hunt | US 5,674,367 | Oct. 7, 1997 |
| Bilz ¹ | DD 150,482 | Sep. 2, 1981 |

REJECTION(S)

1. Claims 1-6, 8-12 and 14-17 are rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement, and the Amendment to the Specification filed on April 12, 2006, which amended

¹ We use the English Abstract of record.

paragraph [0026] to include “wherein at least about fifty percent of the front surface is frusta-conically configured”, is objected to as being new matter.

2. Claims 1-6, 8-12 and 14-17 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Hunt ‘405 in view of Hunt ‘367 and Bilz.

ISSUE

1. Have Appellants identified error in the Examiner’s determination that (1) the aspect of the claims pertaining to “wherein at least about fifty percent of the front surface is frusta-conically configured” fails to comply with the written description requirement under 35 U.S.C. § 112, first paragraph, and (2) the Amendment to the Specification filed on April 12, 2006 which amended paragraph [0026] to include “wherein at least about fifty percent of the front surface is frusta-conically configured” is new matter?

We answer this question in the affirmative.

2. Have Appellants identified error in the Examiner’s determination that Hunt ‘405 in view of Hunt ‘367 and Bilz would have suggested the claimed subject matter as set forth in Appellants’ claim 1?

We answer this question in the negative.

FINDINGS OF FACT

Original claim 14 recites that the target insert has a “frusta-conical shaped front surface and a frusta-conical shaped rear surface, the rear surface having at least about sixty percent of its surface area conical-shaped”. Paragraph [0011] of the Specification, as originally filed, also discloses that the target insert has a frusta-conical shaped front surface, and a

frusta-conical shaped rear surface, the rear surface having at least about sixty percent of its surface area conical-shaped. Paragraph [0010] of the original Specification and original claim 9 disclose a “rear surface having at least about fifty percent of its surface are conical-shaped”.

The Examiner states that “it appears from Fig. 4 that the majority of the surface of target is frusta-conical . . .” Ans. 8.

Figure 4 shows front surface 44 having the same shape as rear surface 46.

Appellants do not dispute the Examiner’s findings regarding Hunt ‘405, and we refer to the Examiner’s findings made on pages 5-7 of the Answer.

Hunt ‘367 teaches a circular target. Hunt ‘367, col. 3 ll. 4-6. The target front surface extends above the target backing plate. Hunt ‘367, Figure 7. Hunt ‘367 teaches this allows for thicker targets. Hunt ‘367, col. 2, ll. 6-8.

Bilz teaches a target front surface where the target front surface is frusta-conical to obtain a uniform coating. Bilz, Abstract, Figure 1. Bilz shows a target front surface which has at least 50% of the front surface frusta conically configured. Bilz, Figure 1.

PRINCIPLES OF LAW

The test for determining compliance with the written description requirement is whether the disclosure of the application as originally filed reasonably conveys to the artisan that the inventor had possession at that time of the later claimed subject matter, rather than the presence or absence of literal support in the specification for the claim language. The content of the drawings may also be considered in determining compliance with the written description requirement. *In re Kaslow*, 707 F.2d 1366, 1375 (Fed. Cir. 1983).

In responding to a *prima facie* case of obviousness, one cannot show non-obviousness by attacking references individually where the rejections are based on combinations of references. *In re Merck & Co., Inc.*, 800 F.2d 1091, 1097 (Fed. Cir. 1986); *In re Keller*, 642 F.2d 413, 426 (CCPA 1981).

In an obviousness rejection, the combination of references must be considered as a whole, rather than the specific teaching of each reference. *In re Simon*, 461 F.2d 1387, 1390 (CCPA 1972); *In re McLaughlin*, 443 F.2d 1392, 1395 (CCPA 1971).

Applicant's motivation does not control the obviousness analysis; rather, "any need or problem known in the field of endeavor at the time of invention and addressed by the patent can provide a reason for combining the elements in the manner claimed." *KSR Int'l. Co. v. Teleflex Inc.*, 550 U.S. 398, 420 (2007).

ANALYSIS

1. The 35 U.S.C. § 112, first paragraph, Rejection and the Objection to the Amendment the Specification filed on April 12, 2006

The Examiner's position is that the claimed phrase "wherein at least about fifty percent of the front surface is frusta-conically configured" is not supported by Appellants' original disclosure. Ans. 4. For the same reasons, the Examiner has objected to the Amendment the Specification filed on April 12, 2006, which amended paragraph [0026] to include "wherein at least about fifty percent of the front surface is frusta-conically configured" as being new matter.

Appellants argue that Figure 4 of their Specification provides support for a target wherein at least about fifty percent of the front surface is frusta-conically configured. Reply Br. 3.

In response, the Examiner states that “it appears from Fig. 4 that the majority of the surface of target is frusto-conical but the range of how much is not supported by the specification or the drawings”. The Examiner contends that proportions of features in a drawing are not evidence of factual proportions when drawings are not to scale. Ans. 8-9.

We agree with Appellants that Figure 4 supports the phrase “wherein at least about fifty percent of the front surface is frusta-conically configured” when the drawings and Specification are considered as a whole, for the following reasons.

As pointed out by Appellants on page 3 of the Reply Brief, the Examiner admits that “it appears from Fig. 4 that the majority of the surface of target is frusto-conical”. Furthermore, original claim 14 recites that the target insert has a “frusta-conical shaped front surface and a frusta-conical shaped rear surface, the rear surface having at least about sixty percent of its surface area conical-shaped”. Paragraph [0011] of the Specification, as originally filed, also discloses that the target insert has a frusta-conical shaped front surface, and a frusta-conical shaped rear surface, the rear surface having at least about sixty percent of its surface area conical-shaped. Paragraph [0010] of the original Specification and original claim 9 disclose a “rear surface having at least about fifty percent of its surface are conical-shaped”. This disclosure, coupled with Figure 4 (depicted below) showing

front surface 44 having the same shape as rear surface 46 supports the phrase “wherein at least about fifty percent of the front surface is frusta-conically configured”. *Kaslow*, 707 F.2d at 1375.

Figure 4 is reproduced below:

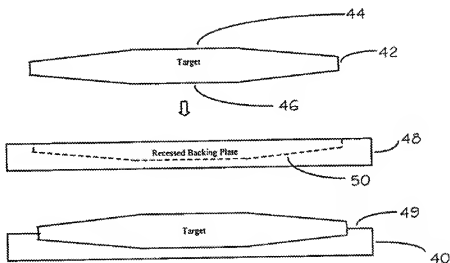


Figure 4.

In view of the above, we reverse the rejection of claims 1-6, 8-12 and 14-17 under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement, and we reverse the objection to the Amendment to the Specification filed on April 12, 2006.

2. Obviousness Rejection

We select claim 1 for consideration in this appeal, based upon Appellants' arguments. 37 C.F.R. § 41.37(c)(1)(vii)(2007).

Appellants do not dispute the Examiner's findings regarding Hunt '405. Br. 10. We refer to the Examiner's findings in this regard made on pages 5-7 of the Answer.

The Examiner states that the differences between Hunt '405 and Appellants' claims are that (1) the target insert protruding above the planar front surface of the backing plate is not discussed, (2) the front surface of the target has a frusta-conical configuration is not discussed, and (3) wherein at least about fifty percent of the front surface is frusta-conically configured is not discussed.

Regarding the target insert protruding above the planar front surface of the backing plate, the Examiner relies upon Hunt '367 for teaching a circular target. Hunt' 367, col. 3 ll. 4-6. The target front surface extends above the target backing plate. Hunt '367, Figure 7. Ans. 7.

Regarding the front surface of the target having a frusta-conical configuration, the Examiner finds that Hunt '405 teaches that the target front surface can be frusta-conical. Hunt '405, Figure 7. The Examiner also finds that Bilz teaches a target front surface where the target front surface is frusta-conical to obtain a uniform coating. Bilz, Abstract; Figure 1. Ans. 7. The Examiner explains that the motivation for utilizing a target that is frusta-conical and that extends above the surface of the backing plate is that it allows for utilizing thicker targets. Hunt '367, col. 2 , ll. 6-8. Ans. 7.

Regarding wherein at least about fifty percent of the front surface is frusta-conically configured, the Examiner relies upon Bilz for teaching a target front surface which has at least 50% of the front surface frusta-conically configured. Bilz, Fig. 1.

Appellants argue that while Hunt '367 discloses that side wall 37 of target 38 is tapered, it is designed to increase the integrity of the target rather than extend the life of the target.²

Appellants argue that in Hunt '367, it is not the sputtering surface 40 which is tapered, but the side wall 37. Appellants argue that this differs from their claimed invention wherein material is added to the front surface of the target, rather than tapering the side walls. Appellants argue that the material is added in a frusta-conical configuration to the front surface of the target, over at least about fifty percent of the front surface of target, so as to extend the target life. Appellants argue that these features are not suggested by Hunt '367.

We are not convinced by these arguments because the Examiner does not rely upon Hunt '367 for these argued features. *In re Merck & Co., Inc.*, 800 F.2d at 1097; *In re Keller*, 642 F.2d at 426 ; *In re Simon*, 461 F.2d at 1390; *In re McLaughlin*, 443 F.2d at 1395 (CCPA 1971). The Examiner relies upon Hunt '367 for teaching a target front surface that extends above the target backing plate as shown in Figure 7.

Appellants then argue that Bilz does not concern the manufacturing of a sputter assembly, wherein the target is affixed into a backing plate, and that Bilz does not disclose the claimed process of hot pressing a target insert into the backing plate to a state of plastic deformation so as to diffusion bond these elements. Appellants also argue that Bilz does not concern the

² The reason for the taper does not have to be the same for the teaching to be applicable. *KSR*, 550 U.S. at 420 (2007).

thickness of the target assembly, but rather the uniformity of the film applied on the substrate. Br. 11.

Again, we are not convinced by these arguments because the Examiner does not rely upon Bilz for any of these argued features, as explained by the Examiner on pages 9-10 of the Answer. *Id.* The Examiner relies upon Bilz for teaching at least about fifty percent of the front surface is frusta-conically configured as shown in Figure 1. The Examiner explains that the motivation for incorporating this feature into the combination of Hunt '367 in view of Hunt '405 is to deposit coatings uniformly. Ans. 8. Also, Bilz does not have to be concerned with the thickness of the target assembly, as argued by Appellants. *KSR*, 550 U.S. at 420 (2007). Also, as explained by the Examiner on page 9-10 of the Answer, Hunt '405 and Hunt '367 address thickness for a target in a backing plate.

CONCLUSIONS OF LAW

1. Appellants have identified error in the Examiner's determination that (1) the aspect of the claims pertaining to "wherein at least about fifty percent of the front surface is frusta-conically configured" fails to comply with the written description requirement under 35 U.S.C. § 112, first paragraph, and (2) the Amendment to the Specification filed on April 12, 2006 which amended paragraph [0026] to include "wherein at least about fifty percent of the front surface is frusta-conically configured" is new matter.
2. Appellants have not identified error in the Examiner's determination that Hunt '405 in view of Hunt '367 and Bilz suggest the claimed subject matter as set forth in Appellants' claim 1.

DECISION

1. The rejection of claims 1-6, 8-12 and 14-17 under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement is reversed, and the objection to the Amendment to the Specification filed on April 12, 2006 is reversed.
2. The rejection of claims 1-6, 8-12 and 14-17 under 35 U.S.C. § 103(a) as being unpatentable over Hunt '405 in view of Hunt '367 and Bilz is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(v).

AFFIRMED

tc

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